Understanding the Landscape

Student Workbook
Version 1.2

Natural Resources Conservation Service
United States Department of Agriculture
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"There is much confusion between land and country. Land is the place where corn, gullies and mortgages grow. Country is the personality of land, the collective harmony of its soil, life and weather... Country may be rich despite a conspicuous poverty of physical endowment and its quality may not be apparent at first glance, nor at all times."

Aldo Leopold, 1949. *A Sand County Almanac*. Oxford University Press

C. Rewa

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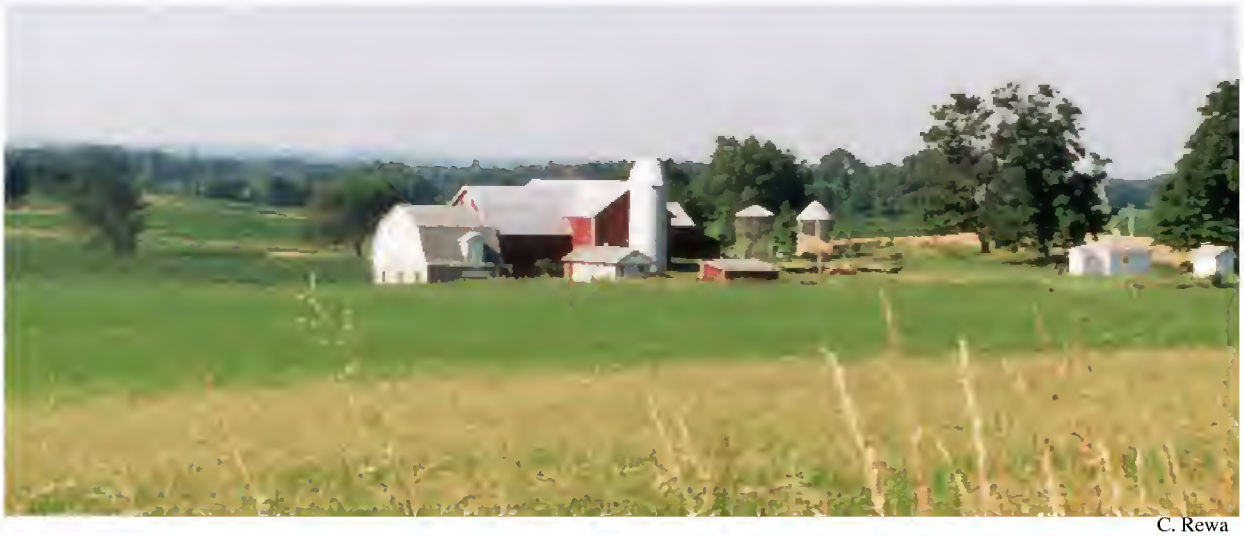
"We must somehow achieve the capacity to step away from the artificial order in which our lives are embedded. We must appreciate the varied scales of time and space in which we exist. We must read well the character of the earth and know how culture has influenced the view from within."

Curt Meine, 1997. *Placing Nature – Culture and Landscape Ecology*. Island Press.



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Ken Hammond

Healthy land is fundamental to supporting agricultural production and communities, a healthy natural environment, and human health and well being. Making land healthy—and keeping it healthy—requires a commitment to land stewardship on the part of individuals and communities, locally and nationally. Effective stewardship must be supported by conservation planning, technical and financial assistance, resource assessment, and technology development.

NRCS Strategic Plan 2000-2005

Course Description

Overview

This course has been developed to help NRCS field personnel and other resource planners and support staff understand landscape processes and how they are interconnected, and to apply this understanding to local conservation planning. The result will facilitate resource management principles to be applied in a more holistic manner.

The course uses a series of videotaped lectures delivered by leading authorities in topics related to landscape functions, and case studies on five landscapes from different parts of the country. This format enables course participants to use the materials in self-study by working independently through the course materials at their own pace. However, we strongly encourage that the materials be used in group training settings to facilitate more in-depth and multi-disciplinary discussion on the topics covered. In either setting, course participants should work with local experts and facilitators to apply the material to local landscapes and social issues. The power of this course, and its ultimate effectiveness in meeting its objectives, lies in the application and transfer of the concepts presented to local landscapes and natural resource concerns.

The material has been arranged in a logical order to help facilitate understanding of landscape processes, how they are interconnected, and how they should be applied in the conservation planning process. Therefore, covering the material in the order presented is highly recommended.

Course Objectives

Upon completion of this course, the participant will be able to:

- Understand ecological processes and how they affect landscape and site condition.
- Incorporate landscape considerations into conservation planning.
- Effectively communicate to land managers how physical, biological and social components of landscapes interact and function under different management scenarios.

Prerequisites and Eligibility

No prerequisites. Any federal, state of district employee, tribal representative, or others involved in conservation planning may participate.

Duration

24-32 hours, depending on group size and field activities

Guidance for Instructors

Understanding the Landscape is offered in video format to allow flexibility in how state and field office personnel use it for conservation planning training. Ideally, the course will be offered to groups of NRCS conservationists representing multiple disciplines, following the sequence of lectures suggested in the workbook. This approach allows students to focus on the course without interruption and in a sequence that maximizes comprehension and synthesis of the course material. More importantly, students taking the course in a group setting have the opportunity to discuss the concepts and principles conveyed in lectures with colleagues with various viewpoints and perspectives. Group discussions and dialogue will increase the effectiveness of the lecture content, study questions, and practical exercises in helping students comprehend the complexities of natural resource management at different scales of concern. The exercises and study questions provided in this workbook are designed to stimulate thought and discussion on how the concepts presented in each module can be applied to local landscape settings.

Although we have provided some example answers to study questions in the Instructor Version of this workbook, there are no exclusive "correct" solutions to exercises or answers to study questions. Course facilitators and instructors should develop locally relevant responses to questions and exercises where appropriate, and encourage course participants to develop their own solutions that relate to local landscapes where they live and work. For several of the practical exercises provided in this workbook, trainers are requested to provide aerial photos and other materials relevant to the conservation issues in their respective states. When the training is offered to larger groups, state- or region-specific examples are well worth the time spent gathering these materials.

The course may be taken by individuals working independently if attending group sessions is not possible due to time or travel constraints or scheduling conflicts. Participants working through the course material on their own will forego the benefit of the multi-disciplinary discussions that take place in group training sessions. Nevertheless, they will gain knowledge and improve their ability to convey the complexities of resource management that are critical to sound conservation planning.

State Resource Conservationists are encouraged to facilitate training sessions comprised of local groups of specialists of various disciplines. Inviting local experts and partners outside of NRCS, with backgrounds in agronomy, ecology, natural resource and landscape management, cultural ecology and natural resource economics will enhance the discussions and learning experiences of participants. Lastly, instructors or facilitators of the course are asked to provide participants with a list of local contacts with expertise in the disciplines represented by the lectures. This will assist trainees in answering questions that are likely to arise as the complex principles highlighted in this course are implemented in conservation planning activities.

The Understanding the Landscape lecture and workbook material was developed to serve as a useful tool for training conservation planners. Instructors are encouraged to use this tool to meet local needs by being flexible with the pace of course delivery and by presenting additional information as appropriate.

Instructions to Participants

Welcome to Understanding the Landscape. This training course consists of 17 modules designed to be useable in both self-study and group setting formats. Twelve modules are devoted to specific topics related to our understanding of how landscapes function. Five case studies are presented that illustrate how the various topics covered in the lecture materials relate to one another and influence landscape condition and management opportunities in specific areas of the United States.

Modules consist of videotaped lectures presented by recognized experts in landscape ecology, biology, hydrology, cultural ecology, and other topics related to landscape function. This workbook is designed to supplement the material presented in the video modules.

For each of the specific topic lectures, this workbook provides a list of objectives, a lecture outline, classroom and/or field exercises, and study questions to help generate discussion and further exploration of the material covered. A glossary and list of references and selected readings, organized by module topic, are included.. The exercises and study questions are designed to help participants integrate the material covered and apply it to local settings and situations. Therefore, completion of the exercises and study questions is an important step toward understanding the course material. Participants are also encouraged to develop their own additional exercises that may relate to their work environment.

Each module builds on information presented in previous modules, and the case studies integrate these concepts throughout the course. For this reason, we encourage course participants to complete the modules in the order presented.

Each module should be completed by taking the following steps:

For the Lectures:

1. Read the objectives and review the lecture outline for the module.

2. View the lecture video. Many of the slides used in the lectures are provided in each workbook chapter to assist you in following along as the material is presented.

3. Complete the classroom and field exercises.

4. Answer the study questions for the lecture and use them to generate discussion within a group setting.

5. If working in a group setting, discuss lecture material and exercises.

6. Refer to the glossary provided in the back of the workbook as needed.

7. Refer to the references and selected readings to further explore the material covered.

For the Case Studies:

1. View the case study video.

2. Answer the study questions and use them to generate discussion within a group setting.

Course completion dates

Course material should be completed within 90 days of initiation.

Contacts

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Technical Contact: State Resource Conservationist or other technical contact person identified at the state level.

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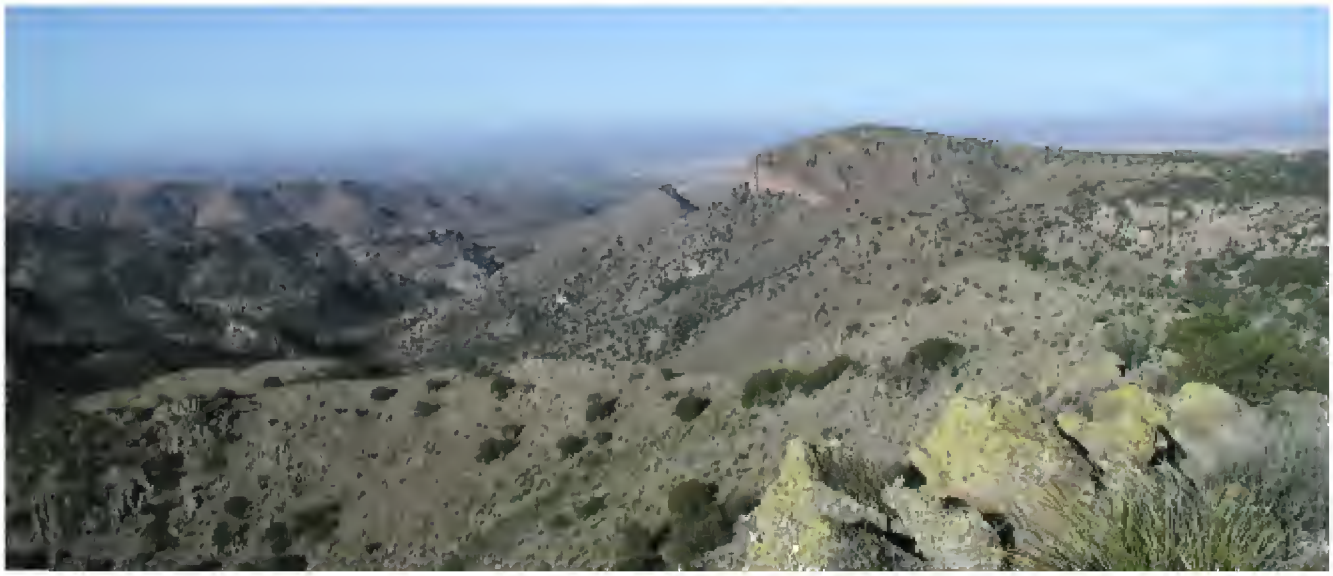

K. Boyer

Course Introduction

The mission of the Natural Resources Conservation Service is to provide leadership in a partnership effort to help people conserve, maintain, and improve our natural resources and environment. The partnership relies on the actions of over two million private landowners and managers and the assistance of many governmental and non-governmental entities to help these land managers conserve our natural resource heritage.

Beginning in the 1930's, NRCS has been working with landowners and managers to maintain and improve the health of rural lands all across America. Much of this assistance has been in the form of addressing soil erosion, water quality, and other natural resource problems on individual farms and ranches. Other efforts have entailed addressing broader natural resource concerns in specific watersheds by engaging the affected communities. These efforts have taught the agency that in order to effectively address natural resource problems we must understand the basic processes that are at play on the land. In a sense, we must learn to calibrate our senses in order to read the land and to understand the words on its pages.

NRCS conservation planners work to help individual land users plan, apply, and maintain conservation systems that are site-specific and economically and environmentally sound. While specific conservation practices are applied locally, their application must be put in context with the surrounding landscape to be effective in the long run. For this reason, conservation planners must have a grasp of how individual tracts of land are affected by the soils, nutrient dynamics, historical treatment, native biota, natural disturbance patterns and human-induced perturbations, and other factors on-site, in the watershed, and in the broader landscape.

In addition to understanding how landscape processes affect conservation planning on individual farms and ranches, planners must also be able to convey this understanding to land managers who apply these practices on the land. To do this, planners must match technical skills related to natural ecosystem processes with the ability to engage landowners and communities in addressing natural resource concerns within local economic and social issues and objectives.

This course, by acknowledging the many disciplines needed to adequately understand ecosystem processes and our influence on them, seeks to provide planners with the landscape perspective needed to more effectively address natural resource concerns through ecosystem-based conservation planning.

The stated vision of the agency is to create harmony between people and the land. This vision is more likely realized when we have a better understanding of how the land functions and how

"All ethics so far evolved rest upon a single premise: that the individual is a member of a community of inter-dependent parts....The land ethic simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land."

Aldo Leopold, 1949. *A Sand County Almanac,* Oxford University Press

people—historically, today, and in the future--directly and indirectly affect land condition. With this understanding, we are more capable of working ***with*** the land to improve its condition by focusing on ecosystem processes, rather than being obliged to continually work ***on*** the land through short-term or near-sighted solutions.

We invite you to challenge yourself with the course material. Seek new understanding of how material you may already be familiar with relates to the rest of the course material. Engage your colleagues in discussion and debate on how the concepts presented relate to your local area. Try to see the land in a new way at every opportunity—to hear what it has to tell us that we have not yet heard. And enjoy the course.